



## Heartworms

**The Life Cycle** Heartworm disease is a serious and common health problem that affects thousands and thousands of dogs each year. Although rare, heartworm disease has also been reported in other animals such as cats and even in humans! Canine heartworm disease is spread by an ordinary mosquito, thus can be found wherever mosquitoes breed. The cycle of this dangerous disease begins when an infected mosquito deposits larvae into the skin of the dog. The infective larvae then burrow into the tissue for three to four months where it develops into small adult worms. The infective larvae then penetrates into the veins of the dog proceeding to move toward the right side of heart, where as adults they can live for five years. The lengths of these adult worms vary but can reach up to twelve inches. When adult worms of both sexes are present in the heart, they mate and produce thousands of live young called microfilaria. If the microfilaria are to continue their life cycle they must go to a secondary host, the mosquito. However, as these thousands of microfilaria wait for a mosquito, they remain alive in the dog's bloodstream for as long as three years. If and when these microfilaria are ingested by a mosquito they too develop into an infected larvae where they wait to begin the cycle once again.

**How Heartworms Affect Your Pet** Adult worms live in the pulmonary arteries and the right side of the heart. As the lengths and number of these adult worms continues to increase and invade the right ventricle and atrium of the heart, it can interfere with the mechanics of the heart and cause heart failure. Another condition caused by heartworms is pulmonary thromboembolism. This happens when heartworms are carried into the branches of the pulmonary circulation and produce clotting of the arteries. This is very dangerous because it can cause a loss of lung function and cardiac failure in the dog. Lastly, heartworm disease can cause vena cavae syndrome. This basically means that the heartworms begin to form clumps in the anterior and posterior vena cavae (hepatic veins) of the dog. Once this happens, you will see signs of acute liver failure develop causing the dog to collapse or die within two to three days. All three of these conditions are signs of advanced heartworm disease and must be evaluated by a veterinarian immediately.

**Symptoms** Most dogs infected with heartworm disease show no visible signs for the first several years. Signs that do eventually appear depend on the number of worms present in the heart and bloodstream, the duration of the infection and the immune system of the dog. Common symptoms of heartworm disease include: · Weight loss · A soft, deep cough that gets worse with exertion · Shortness of breath · Lack of will to exercise, the dog will tire easily · Weakness and listlessness · Bloody sputum Keep in mind that as the disease progresses, symptoms become more and more prominent.

**Treatment** Once heartworm disease is diagnosed, treatment must begin as soon as possible under the care of a licensed veterinarian. Furthermore, due to the nature of the treatment and the dangers involved, the dog must be given an evaluation to make sure he/she is healthy enough to handle the administration of drugs used to kill the worms. The steps of this treatment are as follows:

1. **Adulticide therapy** - A very effective drug is administered intravenously to the affected dog in two doses per day for two days to kill the adult worms. Possible side effects include loss of appetite, coughing, vomiting and jaundice. The dog must then rest for several weeks allowing the body to absorb the dead worms. In those animals that are critically ill, the adult worms may have to be removed surgically.

2. **Filaricide therapy** - Two different drugs can be used during this process of killing the microfilaria. Ivermectin (Heartguard - 30) is one drug that may be used and is given by mouth. The dog must then be observed for six to eight hours for possible side effects such as weakness, stumbling gait, vomiting and diarrhea. The number of microfilaria will begin to decline dramatically within hours. And after about three weeks, 90 percent of the microfilaria will have been eliminated from the dog's body. Tests are then given to see if the treatment was successful, if not then medication must be administered once again. Levamisole is another oral drug that can be used to rid the body of microfilaria. However, the medications are different in that this drug must be administered to the affected animals for seven to fourteen days.

**Prevention** As you can see, heartworm disease is not to be taken lightly. Therefore it is important to test your pet for heartworms annually if at least six months or older and to keep your beloved pet on some kind of preventive. Although there are a variety of drugs available, the two most common offered by veterinarians are Interceptor and Ivermectin (Heartguard - 30). Both of these drugs are given orally to your pet once a month and are FDA approved. Other ways of lowering the risk of heartworm disease is to spray your yard, bedding and any other areas your pet frequents. Furthermore, another way to protect your dog from being bitten by an infected mosquito is to keep him/her indoors in the late afternoons and evenings when mosquitoes are feeding.